Commercial Standard 178-51

Testing and Rating Ventilating Fans (Axial and Propeller Types)

A RECORDED VOLUNTARY STANDARD OF THE TRADE

COMMODITY STANDARDS

Simplified Practice Recommendations and Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Industry and Commerce, Bureau of Foreign and Domestic Commerce, and with the National Bureau of Standards.

The purpose of Simplified Practice Recommendations is to eliminate avoidable waste through the establishment of standards of practice for stock sizes and varieties of specific commodities that currently are in general production and demand. The purpose of Commercial Standards is to establish standard methods of test, rating, certification, and labeling of commodities, and to provide uniform bases for fair competition.

The adoption and use of a Simplified Practice Recommendation or a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

A Simplified Practice Recommendation or a Commercial Standard originates with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The Division, by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the Division assures continuous servicing of each effective Simplified Practice Recommendation and Commercial Standard, through review and revision, whenever, in the opinion of the industry, changing conditions warrant such action. Simplified Practice Recommendations and Commercial Standards are printed and made available by the Department of Commerce through the Government Printing Office and the Department of Commerce field offices.

UNITED STATES DEPARTMENT OF COMMERCE

Sinclair Weeks, Secretary

U. S. DEPARTMENT OF COMMERCE

SINCLAIR WEEKS, Secretary

OFFICE OF TECHNICAL SERVICES

IN COOPERATION WITH

NATIONAL BUREAU OF STANDARDS

AMENDED (PAGE 12)

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Testing and Rating Ventilating Fans (Axial and Propeller Types)

Effective for New Production From June 25, 1951

1. PURPOSE

1.1 The purpose of this commercial standard is to establish standard methods of testing and rating ventilating fans for the guidance of producers, distributors, and users.

2. SCOPE

2.1 This standard covers definitions, construction requirements, and methods of testing and rating axial and propeller fans, and a uniform method for declaring compliance with the standard.

3. DEFINITIONS

3.1 *Axial fans.*—The term "axial fans" shall cover vaneaxial and tubeaxial fans.

3.1.1 *Vaneaxial fan.*—A vaneaxial fan (fig. 1) is designed to move air or gases over a wide range of volumes and pressures. It is generally constructed of sheet or cast metals, and consists of a casing, wheel, guide vanes, and driving mechanism. It may or may not have a gradually enlarging outlet and streamlined inlet.

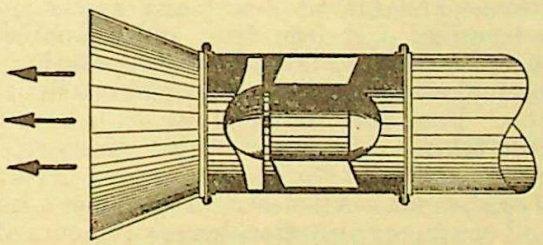

FIGURE 1. *Vaneaxial fan—either belt drive or direct connection.*

3.1.2 *Tubeaxial fan.*—A tubeaxial fan (fig. 2) is similar to a vaneaxial fan but does not have guide vanes. It may or may not have a gradually enlarging outlet and streamlined inlet.

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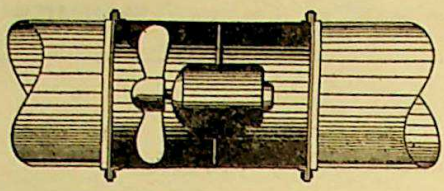

FIGURE 2. *Tubeaxial fan—either belt drive or direct connection.*

3.2 *Propeller fan.*—The term "propeller fan" (fig. 3) applies to a fan that is designed to move air from one enclosed space to another, or from indoors to outdoors, or vice versa. This type of fan is designed to move air or gases over a wide range of volumes at low pressures.

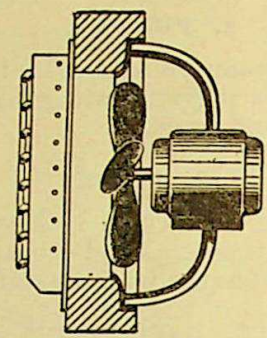

FIGURE 3. *Propeller fan—either belt drive or direct connection.*

3.3 *Manufacturer.*—For the purposes of this standard, the manufacturer shall be the company or organization which evidences its responsibility to the purchaser by permanently affixing its name, address, or nationally registered trade-mark or trade name to the fan.

4. REQUIREMENTS

4.1 *Construction.*—The fan unit and any accessories shall be of substantial construction, and free from objectionable vibration or reverberation effects, so as to provide for safe operation and minimum vibration. Fans for residential or commercial use shall be reasonably quiet in operation. Fans for industrial use shall have noise levels as low as practicable taking into consideration pressure characteristics and the ambient noise level of the industrial area involved.

4.2 *Electrical equipment.*—All electrical equipment, including motor and controls, shall conform to applicable requirements of the National Electrical Code. Motors, when operating under rated conditions, shall not have a temperature rise exceeding NEMA standards,[1] shall be designed for continuous duty and be so marked, and shall cause no unreasonable amount of radio interference.

4.3 *Rating.*—Axial and propeller fans shall be tested in accordance with the applicable sections of the Standard Code for the Testing

[1] National Electrical Manufacturers' Association, Motor and Generator Standards Publication No. 45–102 (June 1945), or latest revision.

of Centrifugal and Axial Fans.[2] The manufacturer's published ratings shall have been determined by tests of the equipment, made in accordance with the provisions of the standard test code.

5. MARKING

5.1 *Manufacturer's name or trade-mark.*—The fan manufacturer's name or nationally registered trade-mark or trade name shall be clearly, legibly, and permanently marked in a position visible or readily accessible after installation.

5.2 *Motor ratings.*—The catalog number of the fan and the rating of the motor in volts, amperes, and horsepower shall be marked in the manner specified in 5.1 for name or trade-mark.

5.3 *Compliance labeling.*—The manufacturer shall permanently attach, in a visible position, a label embodying the wording of the full compliance declaration shown in 5.4, or the following wording:

This fan complies with
Commercial Standard CS178–51.

It is understood that only those fans which comply with this standard may be so labeled and that all marking may be included in a single nameplate.

5.4 *Compliance declaration.*—In order that the purchaser may be assured of obtaining fans rated according to this standard, manufacturers may individually or in concert with their trade association declare that the ratings of fans have been determined in accordance with this standard. They may include in their sales literature, invoices, and contracts, the following statement:

> The ratings of these fans have been determined in accordance with Commercial Standard CS178–51, as developed by the trade under the procedure of the Commodity Standards Division, and issued by the U. S. Department of Commerce.

6. EFFECTIVE DATE

6.1 Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this commercial standard was issued by the United States Department of Commerce, effective from June 25, 1951.

EDWIN W. ELY,
Chief, Commodity Standards Division.

HISTORY OF PROJECT

On April 14, 1949, the Propeller Fan Manufacturers' Association, after consulting interested manufacturers, requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for testing and rating ventilating fans of the axial and propeller types. A draft of the proposed standard was submitted by the Propeller Fan Manufacturers' Association on July 29, 1949, and subsequently adjusted in accordance with suggestions of manufacturers and other interested organizations.

[2] National Association of Fan Manufacturers' Bulletin 110, or latest revision, issued jointly by the American Society of Heating and Ventilating Engineers and the National Association of Fan Manufacturers.

On June 27, 1950, the revised proposed commercial standard was circulated to the trade for advance comment. This draft was reviewed in detail by the Propeller Fan Manufacturers' Association on September 29, 1950, and adjusted to represent the composite views of all interested groups. The recommended standard was circulated to the industry for consideration and acceptance on March 1, 1951.

Following acceptance by a satisfactory majority, and in the absence of active, valid opposition, an announcement was issued on May 25, 1951, that the standard had been accepted as a recorded voluntary standard of the trade, effective for new production from June 25, 1951.

Project Manager: H. A. Bonnet, Commodity Standards Division, Office of Industry and Commerce.
Technical Adviser: R. S. Dill, Building Technology Division, National Bureau of Standards.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, Office of Industry and Commerce, U. S. Department of Commerce, which acts as secretary for the committee.

Manufacturers:

Tom Byrd, Lau Blower Co., 2001 Home Avenue, Dayton, Ohio (chairman).
M. L. Aitken, Propellair Division, Robbins & Myers, Inc., Springfield, Ohio.
Edward Buddrus, Acme Equipment Co., 213 East Broadway, Muskogee, Okla.
E. W. Petersen, American Blower Corp., Detroit 32, Mich.
C. Espy Reed, Reed Unit-Fans, Inc., 1001 Saint Charles Avenue, New Orleans 8, La.

Distributors:

M. O. Hollis, Raybro Electric Supplies, Inc., Tampa, Fla.
W. M. Schermes, Schermes Co., 220 West Seventy-second, Kansas City 5, Mo.

Installers:

E. F. Gaines, Home Conditioning Co., Tenth & Moffet, Joplin, Mo.
T. J. Oliver, Oliver & McClellan, Inc., 30 Church Street, New York 7, N. Y.
John L. Underwood, John L. Underwood Co., Inc., 555 Whitehall SW., Atlanta 3, Ga.

Consumers:

R. K. Thulman, Housing and Home Finance Agency, 1626 K Street NW., Washington 25, D. C.
Carl E. Helfrich, 21 East York Street, Savannah, Ga. (representing American Institute of Architects).

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date _____

Commodity Standards Division,
Office of Industry and Commerce,
U. S. Department of Commerce,
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard 178–51 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the testing and rating of ventilating fans of the axial and propeller types, with which we are directly concerned as a

producer,[1] distributor,[1] purchaser,[1] testing laboratory.[1]

We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer_____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer_____

Organization _____
(Fill in exactly as it should be listed)

Street address_____

City, zone, and State_____

[1] Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

(Cut on this line)

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, testing, purchase, use, or installation of ventilating fans of the axial and propeller types. In accepting the standard they reserved the right to depart from it as they individually deem advisable. It is expected that articles which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

ASSOCIATIONS

(General Support)

American Association of Engineers, Chicago, Ill.
Propeller Fan Manufacturers' Association, Detroit, Mich.

FIRMS AND OTHER INTERESTS

Acme Equipment Co., Muskogee, Okla.
Aerovent Fan Co., Inc., Piqua, Ohio
Air Controls, Inc., Division of Cleveland Heater Co., Cleveland, Ohio
Albert, Henry, Jr., & Co., Inc., Pikesville, Md.
American Blower Corp., Dearborn, Mich.
Bar-Brook Manufacturing Co., Inc., Shreveport, La.
Bauer, John J., Co., Inc., New York, N. Y.
Berkshire Sheet Metal Works, Inc., Pittsfield, Mass.
Booey, W. L., Co., Reading, Pa.
Bowser-Morner Testing Laboratories, Dayton, Ohio.
Buffalo Forge Co., Buffalo, N. Y.
Central of Georgia Railway Co., Savannah, Ga.
Champion Blower & Forge Co., Lancaster, Pa.
Clarage Fan Co., Kalamazoo, Mich.
Coastal Supply & Chemical Co., Ridgewood, N. J.
Columbia Electrical Co., Kansas City, Mo.
Commercial Testing & Engineering Co., Chicago, Ill.
DeBothezat Fans Division, American Machine & Metals, Inc., East Moline, Ill.
Electric Supply Co., Atlanta, Ga.
Garden City Fan Co., Chicago, Ill. (General support.)
Hartzell Propeller Fan Co., Piqua, Ohio.
Herman Nelson Division, American Air Filter Co., Inc., Moline, Ill.
Holcomb & Hoke Manufacturing Co., Inc., Indianapolis, Ind.
Home Conditioning Co., Joplin, Mo.
Hunt, Robert W., Co., Chicago, Ill.
Hunter Fan & Ventilating Co., Memphis, Tenn.
Ilg Electric Ventilating Co., Chicago, Ill.
Lau Blower Co., Dayton, Ohio.
New York Blower Co., Chicago, Ill.
New York Testing Laboratories, Inc., New York, N. Y.
Newton-Stinchcomb Co., Baltimore, Md.
Oliver & McClellan, Inc., New York, N. Y.
Omaha Testing Laboratories, Omaha, Nebr.
Orman Wood & Metal Products, Columbus, Ind.
Patzig Testing Laboratories, Des Moines, Iowa.
Peerless Electric Co., Warren, Ohio.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Plank Electric Co., Norwich, Conn.
Quietaire Corp., Houston, Tex.
Raybro Electric Supplies, Inc., Tampa, Fla.
Redman Engineering Service, High Point, N. C.
Reed Unit-Fans, Inc., New Orleans, La.
Rhodes Equipment Co., St. Louis, Mo.
Riverside Electric Co., Riverside, Ill.
Robbins & Myers, Inc., Propellair Division, Springfield, Ohio.
Schermes Co., Kansas City, Mo.
Sears, Roebuck & Co., Chicago, Ill.
Sonntag, J. H., & Co., Dallas, Tex.
Sprouse, V. E., Co., Inc., Columbus, Ind.
Standard Materials Co., Little Rock, Ark.
Stephenson Appliance Co., Raleigh, N. C.
Thompson & Lichtner Co., Inc., Brookline, Mass.
Tour, Sam, & Co., Inc., New York, N. Y.
Trane Co., La Crosse, Wis.
United States Testing Co., Inc., Hoboken, N. J.
Viking Air Conditioning Corp., Cleveland, Ohio. (General support.)
Weaver, G. B., & Sons Electric Co., Salisbury, N. C.
Westendorf & Co., Baltimore, Md.
Western Blower Co., Seattle, Wash.
Westinghouse Electric Corp., Sturtevant Division, Boston, Mass.
Wing, L. J., Manufacturing Co., Linden, N. J.

UNITED STATES GOVERNMENT

Agriculture, U. S. Department of, Division of Purchase, Sales, and Traffic, Washington, D. C.
Army, United States, Office of the Assistant Chief of Staff, Washington, D. C.
Federal Housing Administration, Underwriting Division, Washington, D. C. (General support.)

COMMERCIAL STANDARDS

CS No.

0–40. Commercial standards and their value to business.
1–42. Clinical thermometers.
2–30. Mopsticks.
3–40. Stoddard solvent.
4–29. Staple porcelain (all-clay) plumbing fixtures.
5–46. Pipe nipples; brass, copper, steel, and wrought-iron.
6–31. Wrought-iron pipe nipples. Superseded by CS5–46.
7–29. Standard weight malleable iron or steel screwed unions.
8–51. Gage blanks.

CS No.

9–33. Builders' template hardware.
10–29. Brass pipe nipples. Superseded by CS5–46.
11–41. Moisture regains of cotton yarns.
12–48. Fuel oils.
13–44. Dress patterns.
14–51. Boys' sport and dress shirt (woven fabrics) size measurements.
15–46. Men's pajama sizes (made from woven fabrics).
16–29. Wallpaper.
17–47. Diamond core drill fittings.
18–29. Hickory golf shafts.
19–42. Foundry patterns of wood.

CS No.

20–49. Vitreous china plumbing fixtures.
21–39. Interchangeable ground-glass joints, stopcocks, and stoppers.
22–40. Builders' hardware (nontemplate).
23–30. Feldspar.
24–43. Screw threads and tap-drill sizes.
25–30. Special screw threads. Superseded by CS24–43.
26–30. Aromatic red cedar closet lining.
27–36. Mirrors.
28–46. Cotton fabric tents, tarpaulins and covers.
29–31. Staple seats for water-closet bowls.
30–31. (Withdrawn).
31–38. Wood shingles.
32–31. Cotton cloth for rubber and pyroxylin coating.
33–43. Knit underwear (exclusive of rayon).
34–31. Bag, case, and strap leather.
35–49. Hardwood plywood.
36–33. Fourdrinier wire cloth.
37–31. Steel bone plates and screws.
38–32. Hospital rubber sheeting.
39–37. (Withdrawn).
40–32. Surgeons' rubber gloves.
41–32. Surgeons' latex gloves.
42–49. Structural fiber insulating board.
43–32. Grading of sulphonated oils.
44–32. Apple wraps.
45–48. Douglas fir plywood.
46–49. Hosiery lengths and sizes.
47–34. Marking of gold-filled and rolled-gold-plate articles other than watchcases.
48–40. Domestic burners for Pennsylvania anthracite (underfeed type).
49–34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50–34. Binders board for bookbinding and other purposes.
51–35. Marking articles made of silver in combination with gold.
52–35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53–35. Colors and finishes for cast stone.
54–35. Mattresses for hospitals.
55–35. Mattresses for institutions.
56–49. Oak flooring.
57–40. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings.
58–36. Woven elastic fabrics for use in overalls (overall elastic webbing).
59–44. Textiles—testing and reporting.
60–48. Hardwood dimension lumber.
61–37. Wood-slat venetian blinds.
62–38. Colors for kitchen accessories.
63–38. Colors for bathroom accessories.
64–37. Walnut veneers.
65–43. Methods of analysis and of reporting fiber composition of textile products.
66–38. Marking of articles made wholly or in part of platinum.
67–38. Marking articles made of karat gold.
68–38. Liquid hypochlorite disinfectant, deodorant, and germicide.
69–38. Pine oil disinfectant.
70–41. Phenolic disinfectant (emulsifying type) (published with CS71–41).
71–41. Phenolic disinfectant (soluble type) (published with CS70–41).
72–38. Household insecticide (liquid spray type).
73–48. Old growth Douglas fir, Sitka spruce, and Western hemlock standard stock doors.

CS No.

74–39. Solid hardwood wall paneling.
75–42. Automatic mechanical draft oil burners designed for domestic installations.
76–39. Hardwood interior trim and molding.
77–48. Enameled cast-iron plumbing fixtures.
78–40. Ground-and-polished lenses for sun glasses (published with CS79–40).
79–40. Blown, drawn, and dropped lenses for sun glasses (published with CS78–40).
80–41. Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81–41. Adverse-weather lamps for vehicles (after market).
82–41. Inner-controlled spotlamps for vehicles (after market).
83–41. Clearance, marker, and identification lamps for vehicles (after market).
84–41. Electric tail lamps for vehicles (after market).
85–41. Electric license-plate lamps for vehicles (after market).
86–41. Electric stop lamps for vehicles (after market).
87–41. Red electric warning lanterns.
88–41. Liquid burning flares.
89–40. Hardwood stair treads and risers.
90–49. Power cranes and shovels.
91–41. Factory-fitted Douglas fir entrance doors.
92–41. Cedar, cypress, and redwood tank stock lumber.
93–50. Portable electric drills (exclusive of high frequency).
94–41. Calking lead.
95–41. Lead pipe.
96–41. Lead traps and bends.
97–42. Electric supplementary driving and passing lamps for vehicles (after market).
98–42. Artists' oil paints.
99–42. Gas floor furnaces—gravity circulating type.
100–47. Porcelain-enameled steel utensils.
101–43. Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.
102– . (Reserved for Diesel and fuel-oil engines.)
103–48. Rayon jacquard velour (with or without other decorative yarn).
104–49. Warm-air furnaces equipped with vaporizing type oil burners.
105–48. Mineral wool insulation for low temperatures.
106–44. Boys' pajama sizes (woven fabrics).
107–45. (Withdrawn).
108–43. Treading automobile and truck tires.
109–44. Solid-fuel-burning forced-air furnaces.
110–43. Tire repairs—vulcanized (passenger, truck, and bus tires).
111–43. Earthenware (vitreous-glazed) plumbing fixtures.
112–43. Homogeneous fiber wallboard.
113–51. Oil-burning floor furnaces equipped with vaporizing pot-type burners.
114–43. Hospital sheeting for mattress protection.
115–44. Porcelain-enameled tanks for domestic use.
116–44. Bituminized-fiber drain and sewer pipe.
117–49. Mineral wool insulation for heated industrial equipment.

CS No.

118–44. Marking of jewelry and novelties of silver.
(E) 119–45.[1] Dial indicators (for linear measurements).
120–48. Standard stock ponderosa pine doors.
121–45. Women's slip sizes (woven fabrics).
122–49. Western softwood plywood.
123–49. Grading of diamond powder.
(E) 124–45.[1] Master disks.
125–47. Prefabricated homes.
126–45. Tank mounted air compressors.
127–45. Self-contained mechanically refrigerated drinking water coolers.
128–49. Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes.)
129–47. Materials for safety wearing apparel.
130–46. Color materials for art education in schools.
131–46. Industrial mineral wool products, all types—testing and reporting.
132–46. Hardware cloth.
133–46. Woven wire netting.
134–46. Cast aluminum cooking utensils (metal composition).
135–46. Men's shirt sizes (exclusive of work shirts).
136–46. Blankets for hospitals (wool, and wool and cotton).
137–51. Size measurements for men's and boys' shorts (woven fabrics).
138–49. Insect wire screening.
139–47. Work gloves.
140–47. Testing and rating convectors.
141–47. Sine bars, blocks, plates, and fixtures.
142–51. Automotive lifts.
143–47. Standard strength and extra strength perforated clay pipe.
144–47. Formed metal porcelain enameled sanitary ware.
145–47. Testing and rating hand-fired hot water supply boilers.
146–47. Gowns for hospital patients.
147–47. Colors for molded urea plastics.
148–50. Men's circular flat- and rib-knit rayon underwear.
149–48. Utility-type house-dress sizes.
150–48. Hot-rolled rail steel bars (produced from Tee-section rails).
151–48. Body measurements for the sizing of apparel for infants, babies, toddlers, and children (for the knit underwear industry).

CS No.

152–48. Copper naphthenate wood-preservative (spray, brush, dip application).
153–48. Body measurements for the sizing of apparel for girls (for the knit underwear industry).
154– . (Reserved for wire rope).
155–50. Body measurements for the sizing of boys' apparel (knit underwear, shirts, trousers).
156–49. Colors for polystyrene plastics.
157–49. Ponderosa pine and sugar pine plywood.
158–49. Model forms for girls' apparel.
159–49. Sun glass lenses made of ground and polished plate glass, thereafter thermally curved.
160–49. Wood-fiber blanket insulation (for building construction).
161–49. "Standard grade" hot-dipped galvanized ware (coated after fabrication).
162–49. Tufted bedspreads.
163–49. Standard stock ponderosa pine windows, sash, and screens.
164– . (Reserved for concrete mixers).
165–50. Zinc naphthenate wood-preservative (spray, brush, dip application).
166–50. Size measurements for men's work trousers.
167–50. Automotive and general service copper tube.
168–50. Polystyrene plastic wall tiles, and adhesives for their application.
169–50. Galvanized ware fabricated from *pregalvanized* steel sheets.
170–50. Cotton flour-bag (sack) towels.
171–50. Hardwood veneered doors.
172–50. Brass trim for water-closet bowls, tanks, and urinals (dimensional standards).
173–50. Heavy-duty alpha-cellulose-filled melamine tableware.
174–51. 140–F dry-cleaning solvent.
175–51. Circular-knitted gloves and mittens.
176–51. Prefinished wall panels.
177–51. Bituminous-coated metal septic tanks (single compartment, residential).
178–51. Testing and rating ventilating fans (axial and propeller types).
179–51. Installation of attic ventilation fans in residences.
180–52. Model forms for boys' apparel.

[1] Where "(E)" precedes the CS number, it indicates an emergency commercial standard, drafted under war conditions with a view toward early revision.

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Commodity Standards Division, Office of Industry and Commerce, U. S. Department of Commerce, Washington 25, D. C.

415-902 43

415
Dept 6

Amendment No. 1

COMMERCIAL STANDARD CS178–51

TESTING AND RATING VENTILATING FANS

(Axial and Propeller Types)

standing committee has approved the addition of power roof ventilators to the types of fans covered by this standard. All acceptors have been notified and none have filed objections to the addition. Accordingly, the amendment outlined below became effective January 1, 1955.

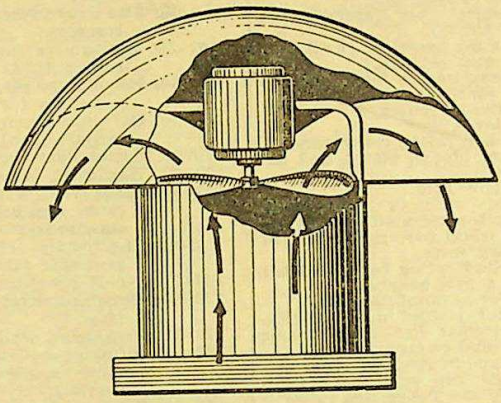

FIGURE 4. *Typical power roof ventilator.*

Power roof ventilator.—The term "power roof ventilator" (fig. 4) applies to a power driven air-handling device designed primarily to exhaust air at various volumes and pressures from an enclosed space. It may also be used to supply air. It consists of an impeller, of centrifugal, axial or propeller types, mounted normally on a vertical shaft, with an integral base and casing supporting the entire unit. The propeller may be either directly connected to driver, or V-belt driven. It is designed for outdoor roof mounting, usually on a curb, but in some special applications may be mounted inside. It may have dampers which close when the unit is not in operation.

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